

## Type-A aortic dissection masquerading as acute inferior wall myocardial infarction - A rare case report

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### ABSTRACT

Aortic dissection occur secondary to splitting of the layers in the wall of the aorta. There is a tear in the intima that results in entry of blood in between the intima and media. Type A dissection typically occurs in the ascending part of the aorta. The tear is brachiocephalic artery. It is a medical emergency. Mortality is high even though there is an advance in medical and surgical techniques. Acute myocardial infarction is a clinical mimic of aortic dissection. This case report discusses a patient with chest pain in the retrosternal area radiating to the back; aortic dissection manifesting as acute inferior wall myocardial infarction.

**Keywords:** acute myocardial infarction, aortic dissection, chest pain

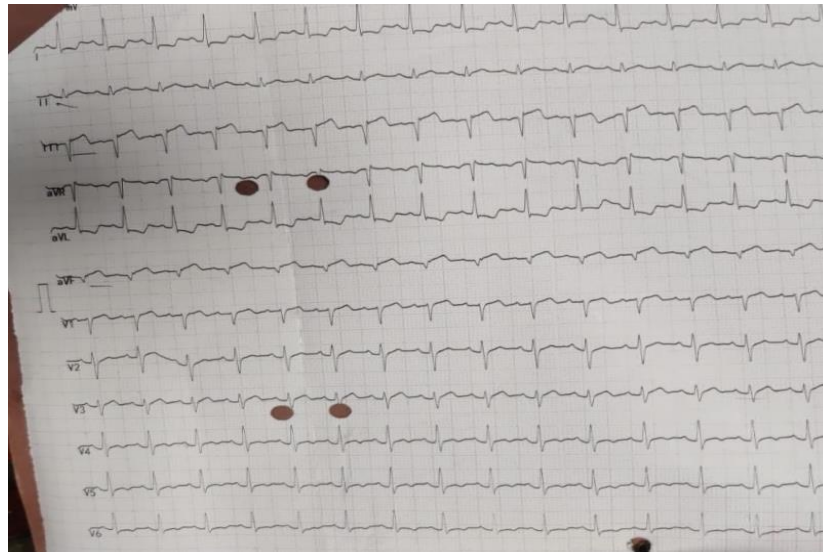
## 1. INTRODUCTION

Aortic dissection is a condition characterized by separation in the layers of the aortic wall. It has many clinical manifestations with life threatening implication (Isselbacher et al., 2016). The clinical picture of aortic dissection is like acute myocardial infarction (AMI). At times ST elevation may be present which makes it easier to misdiagnose aortic dissection as AMI (Koracevic, 2013). Both aetiologies require emergency interventions but have significantly different modes of management (Lentini & Perrotta, 2011). If in aortic dissection thrombolysis is done, the intima may further rupture and lead to uncontrolled bleeding culminating in death of the patient. This especially occurs when the dissection of the aorta extends up to the coronary ostium and masquerades as AMI (Núñez-Gil et al., 2015).

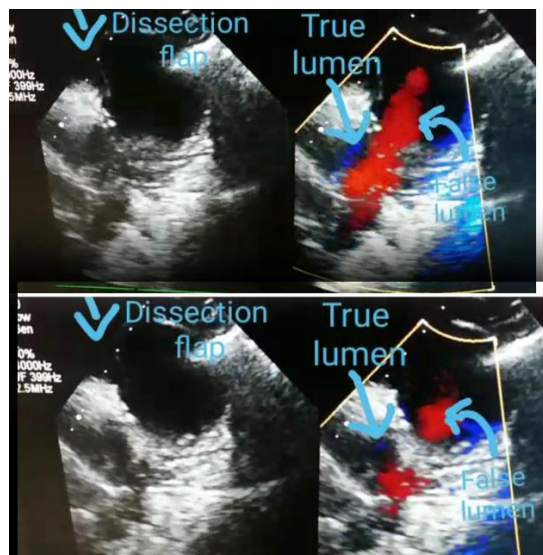
## 2. CASE

A male, 50 years of age presented to the casualty of our hospital with the complaints of retrosternal chest pain radiating to the back since 3 hours. No history of breathless, palpitations, sweating, cough, orthopnoea or paroxysmal nocturnal dyspnoea was obtained. The patient had no comorbidities. There was no significant past medical history. On examination his pulse was

90/minute, respiratory rate was 22/minute, blood pressure was 170/94 mmHg. On auscultation of the chest air entry was bilaterally equal, no adventitious sounds were heard, heart sounds were normal and no murmurs were perceived. ECG showed a sinus rhythm with ST segment elevation in leads aVF, II and III (Figure 1). He was given loading doses of Ecosprin (300mg), Clopidogrel (300mg) and atorvastatin (80mg) and was admitted in the ICU (intensive care unit) for further management. The required samples were collected and Antianginal drugs like isosorbide dinitrate and nicorandil were administered. In view of persistent pain especially radiating to the back a 2D echo was planned before thrombolysis. The 2D echo revealed a break in the intima with dissection flap separating the false& the true lumen suggestive of aortic dissection (figure 2). The patient was shifted to cardiac catheterization laboratory where a coronary angiography was done which showed a 20% luminal narrowing in right coronary artery. A Computed Tomography aortogram showed dissection of aorta proximal to the brachiocephalic extending up to the coronary ostia. The patient was shifted for emergency cardiac surgery. Post operatively the patient did not make a full recovery and succumbed.



**Figure 1** ECG suggestive of ST segment elevation in leads aVF, II and III



**Figure 2** 2D echo showing A true lumen,dissection flap and false lumen.

### 3. DISCUSSION

Concomitant acute myocardial infarction is seen in approximately 7% of the patients with aortic dissection (Kolh et al., 2014). At times aortic dissection may be the only entity but mimics AMI. In such cases it is important to confirm the diagnosis before initiating reperfusion therapy (Williams et al., 2012). Acute myocardial infarction can occur secondary to extension of the dissecting membrane into the coronary ostium in Type-A Aortic Dissection. Dissection commonly originates superior to the

coronary sinus on the right. The false lumen can compress the proximal coronary artery and produce myocardial ischemia. As dissection is commonly in the ascending aorta at the right anterior aspect RCA involvement is more (Sasaki et al., 2013). Transthoracic echocardiography (TTE) and D-dimer testing are helpful in assessing patient with chest pain. Ct Aortogram further helps in establishing the diagnosis (Luo et al., 2009). The definite diagnosis of Aortic Dissection is established by imaging modalities like echocardiography and CT Aortogram. TTE has a sensitivity of 77% and specificity of 93% to 96% for identification of proximal AD (Hiratzka et al., 2010). For any patient with Acute Myocardial Infarction (AMI), Aortic Dissection could be missed resulting in catastrophic consequences. Cardiac catheterization and Antiplatelet therapy are the therapeutic approaches to acute myocardial infarction and are two absolute contraindications to the treatment of Aortic dissection. Both of them can increase the range for dissection, can aggravate bleeding and lead to death (Luo et al., 2009).

Our patient presented with chest pain radiating to the back which persisted even after administration of anti-anginal drugs therefore even though the ECG was suggestive of inferior wall myocardial infarction a 2D echo was done prior to thrombolysis. Because of a flap and false lumen, thrombolysis was averted and the patient was taken to the cardiac catheterization laboratory for angiography. This clinical case highlights the importance of meticulous history taking and clinical judgement in cases of acute chest pain presenting to emergency department. All cases of acute onset chest pain are not acute coronary syndromes. Chest pain radiating to back associated with high blood pressure should alert the treating physician to consider alternate diagnosis like aortic dissection. Inadvertent thrombolysis in aortic dissection is catastrophic.

#### 4. CONCLUSION

Aortic dissection needs to be identified in all cases with AMI when there is characteristic chest pain, radiating to the back. Thrombolysis in such cases may be fatal without adequate evaluation. Hence it is essential to assess all patients with raised blood pressure and chest pain radiating to the back before thrombolysis.

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#### Author Contributions

Nipun Bawiskar, Sandeep Kamat, Sourya Acharya, Sandeep Mohale, Sunil Kumar -concept and writing of the manuscript.

#### Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

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#### Conflict of interests

The authors declare that there are no conflicts of interests.

#### Data and materials availability

All data associated with this study are present in the paper.

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